Lawrence Livermore National Laboratory & the Livermore Public Library present

SCIENCE CHATS

A SERIES OF PUBLIC DISCUSSIONS WITH LEADING SCIENTISTS

Topic: **How do we know that human activities have affected global climate?**

Speaker: **Dr. Benjamin Santer, Lawrence Livermore National Laboratory**

Date: **Tuesday, Oct. 13, 2009**

Time: **7:00 - 8:30 p.m.**

Place: **Livermore Public Library, Civic Center, Craft Room**

In 2007, two conclusions of the Intergovernmental Panel on Climate Change (IPCC) captured the attention of governments and citizens around the world. After a thorough, four-year review of the science, the IPCC found that "warming of the climate system is unequivocal," and identified human activities as the likely cause of "most of the observed warming over the last 50 years." What is the scientific underpinning for these conclusions? Why has our confidence in the reality of a human effect on climate increased over the past two decades? What tools do scientists use to study the nature and causes of climate change? Are there any "inconvenient observations" that call into question findings of a human influence on global climate? These are some of the questions that will be explored in Santer's talk.

About the speaker:

Ben Santer is an atmospheric scientist at Lawrence Livermore National Laboratory. He participated in all four scientific assessment reports of the IPCC, starting with the first in 1990. He was the convening lead author of a key chapter in the IPCC's second assessment report in 1996, which concluded that "the balance of evidence suggests a discernible human influence on global climate." He is a John D. and Catherine T. MacArthur Fellow, an E.O. Lawrence award winner, and a U.S. Department of Energy Distinguished Scientist.

Lawrence Livermore National Laboratory

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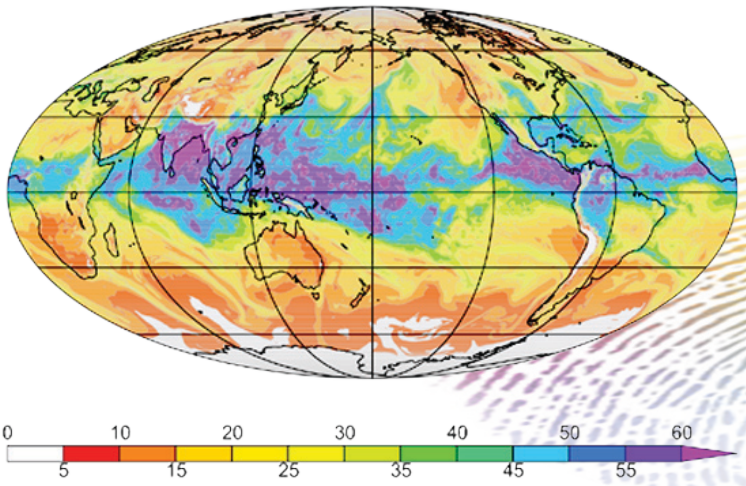
Science Chats are open to the public.

We encourage you to bring your family, friends and an open mind — come ready to learn and ask questions.

Questions? Please contact Carrie Martin , LLNL Public Affairs Office, at 925-424-4175, martin59@llnl.gov.



Total amount of atmospheric water vapor over the oceans on July 4, 2009. These results are from operational weather forecasts of the European Centre for Medium-Range Weather Forecasting (ECMWF).

Climate models agree on human "fingerprints"

Santer's expertise is in the area of "climate fingerprinting," which seeks to identify and separate human effects on climate from purely natural climate influences. His presentation will describe how human fingerprints have been detected in many different aspects of the climate system — not only in the temperatures of the land surface, ocean and atmosphere, but also in atmospheric moisture, rainfall and circulation patterns. He will discuss the dilemma that confronts us, as citizens and stewards of this planet: how to act in both hard scientific evidence that our actions are altering global climate, and continuing uncertainty regarding the magnitude of the planetary warming that faces us.

About the Laboratory

Lawrence Livermore National Laboratory is one of the nation's premier research laboratories. Its primary mission is national security — ensuring the reliability, safety and security of the nation's weapons stockpile, developing capabilities to strengthen U.S. military forces and homeland security, and preventing the worldwide spread and use of weapons of mass destruction. The Laboratory's work also extends to other scientific areas that address pressing national needs, like cleaning up the environment, battling cancer, decoding the human genome, exploring the universe, and studying global climate change. This kind of extreme science requires state-of-the-art computational and experimental tools and research facilities and an exceptional scientific and engineering staff. Approximately 3,600 scientists and engineers work at LLNL. More than 1,400 employees have Ph.Ds. Another 1,100 employees have master's degrees, and 2,600 have bachelor's or AAs.

Lawrence Livermore National Laboratory is a Department of Energy, National Nuclear Security Administration laboratory managed by Lawrence Livermore National Security, LLC.